SYNTHESIS OF MACROCYCLIC POLYMERS BY RING INSERTION POLYMERIZATION OF CYCLIC OLEFIN MONOMERS

ABSTRACT OF THE DISCLOSURE

A method for synthesizing cyclic polymers using transition metal alkylidene complexes as reaction catalysts is provided, wherein the complexes contain a cyclic group. Polymerization is carried out on the catalyst, using cyclic olefin monomers that undergo ring insertion polymerization, and no linear intermediates are generated. Following completion of polymerization, the cyclic polymer detaches from the complex via an intramolecular chain transfer reaction and the catalytic complex is regenerated. The invention also provides novel transition metal alkylidene complexes useful as catalysts in the aforementioned process, as well as novel cyclic hydrocarbons.